The Cobrow Solution

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Dynamic Neighborhood

Dynamic neighborhoods are a more generic model. We will show that dynamic neighborhoods are better suited to represent the dynamic nature of the Web, and that the model is more general in the sense that it includes static neighborhoods and virtual meeting rooms. This chapter introduces the notion of a dynamic neighborhood and motivates it. The next chapter elaborates on the service model as a foundation of the implementation. The architecture of our implementation is described in chapter 3. Chapter 4 discusses results and a chapter on our current and future work concludes this paper.

In the real world (outside of closed rooms), the visible area is different from person to person. Everyone has an individual view of the world. As a result, every person sees a different subset of the objects in his neighborhood, e.g. other people, things, pictures, etc. This means to a Web neighborhood model that every Web user needs his own personal visible area, and a personal set of objects within the visible area. The visible area must not only depend on the surroundings - the Web pages. It should also correlate to the user and its properties. Whereas the static neighborhood is exclusively based on the environment, the dynamic neighborhood takes the user into account. In a static neighborhoods the visibility is the same for each user and pre-set by the VMR. In the dynamic neighborhood the visible area is tied to the user, and computed for each user individually with changing parameters.

The most obvious property of a Web user is of course the location of Web pages visited. Like in the real world, the position of a person determines the visible area. But the surroundings are also influential. On the Web, the environment is given by Web pages and interconnections (hypertext references). As people move from page to page they carry their neighborhood with them. And at the same time the neighborhood changes with every move. In the simplest model (as shown in figure 2) the neighborhood consists of the Web pages, which are close to the current page in terms of links. The user is able to see the neighboring pages and all objects associated with these pages, i.e. other users. A moving user is presented with a changing set of visible objects. Other users may see the user in motion appearing in, and disappearing from their neighborhood.
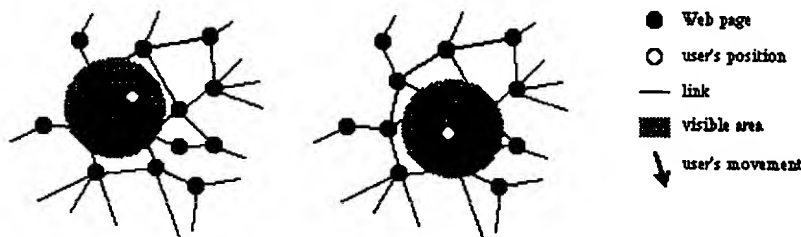

● Web page
○ user's position
— link
▨ visible area
↘ user's movement

Figure 2: Example for a Web user moving from one page to another. The neighborhood is tied to the user. It moves with the user and changes.

Other than in the real world paradigm, there is much more freedom in the definition of the individual neighborhood in Web. Abstract static neighborhoods which are defined by other parameters than plain Web locations (URLs) have already been implemented. One example is the skills and interest based neighborhood of WerWeissWas service (WhoKnowsWhat) [WerWeissWas]. This neighborhood is user oriented. It is does not depend on Web locations at all, neither static nor dynamic ones. A neighborhood is defined by similarity in personal skills and interests.

Later in the paper we will identify many factors and parameters for the computation of dynamic neighborhoods. The purpose of all neighborhood models is to relate people with each other in a way that increases the usefulness of the Web. The neighborhood service has to guess which association might be useful to users. To improve the guess it will acquire movement data (e.g. track users), evaluate visited documents, and ask the user for explicit information (skills, interests).

The Web - URLs and links - constitutes the infrastructure and a major part of the content. Other objects are not visible via the Web's native mechanisms. An additional service - the equivalent of night-vision goggles - is necessary to make these hidden objects visible to browsers.

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